

The opinion in support of the decision being entered today was **not** written for publication and is **not** binding precedent of the Board.

Paper No.

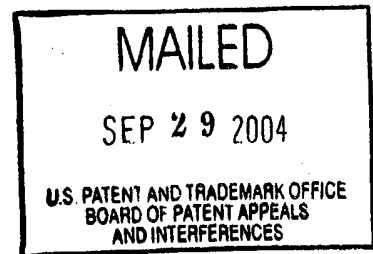
UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

*Ex parte* KENJI ABIKO

Appeal No. 2004-1362  
Application No. 09/926,600

HEARD: August 17, 2004



Before KIMLIN, TIMM and JEFFREY T. SMITH, **Administrative Patent Judges**.  
JEFFREY T. SMITH, **Administrative Patent Judge**.

**DECISION ON APPEAL**

Applicant appeals the decision of the Primary Examiner finally rejecting claims 1 to 6.<sup>1</sup> We have jurisdiction under 35 U.S.C. § 134.<sup>2</sup>

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<sup>1</sup> According to Appellant, Brief page 2, claims 7 to 9 have been withdrawn from consideration.

<sup>2</sup> In rendering this decision, we have considered Appellant's arguments presented in the Brief filed November 4, 2003, and the Reply Brief filed February 27, 2004.

### **BACKGROUND**

Appellant's invention relates to metallic alloys having high strength and ductility at high temperatures. According to Appellant, the high strength and ductility at high temperatures is achieved by controlling the carbon, nitrogen, sulfur and oxygen content in the alloy. (Brief, p. 3).

Claims 1 and 2, which are representative of the claimed invention, appear below:

1. A Cr-based alloy having an excellent strength-ductility balance at higher temperatures, comprising Cr: exceeding 60 mass%, C+N: not more than 20 mass ppm, S: not more than 20 mass ppm, O: not more than 100 mass ppm, O as an oxide: not more than 50 mass ppm, and the remainder being Fe and inevitable impurities.

2. A Cr-based alloy having an excellent strength-ductility balance at higher temperatures, comprising Cr: not less than 65 mass%, C+N: not more than 20 mass ppm, S: not more than 20 mass ppm, O: not more than 100 mass ppm, O as an oxide: not more than 50 mass ppm, and the remainder being Fe and inevitable impurities.

### **CITED PRIOR ART**

As evidence of unpatentability, the Examiner relies on the following references:

Fujisawa et al. (Fujisawa) EP 0597129 A1 May 18, 1994

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Shida et al. (Shida) (Japanese Patent Application)	JP 07-278718	Oct. 24, 1995
Abiko (Japanese Patent Application)	JP 08-225899	Sep. 03, 1996

The Examiner rejected claims 1, 3 and 4 under 35 U.S.C. § 103(a) as obvious over Fujisawa; and claims 1 to 6 under 35 U.S.C. § 103(a) as obvious over the combined teachings of Shida and Abiko. (Answer pp. 3 to 5).

We have carefully reviewed the claims, specification and applied prior art, including all of the arguments advanced by both the Examiner and Appellant in support of their respective positions. This review leads us to conclude that the Examiner's § 103 rejection of claims 1, 3 and 4 under 35 U.S.C. § 103(a) over Fujisawa is well founded. However, the rejection of claims 1 to 6 under 35 U.S.C. § 103(a) over the combined teachings of Shida and Abiko is not well founded. See *In re Oetiker*, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992); *In re Piasecki*, 745 F.2d 1468, 1471-72, 223 USPQ 785, 787-88 (Fed. Cir. 1984).

Rather than reiterate the conflicting viewpoints advanced by the Examiner and the Appellant concerning the above-noted rejections, we refer to the Answer and the Briefs.

### **OPINION**

The Examiner rejected claims 1, 3 and 4 under 35 U.S.C. § 103(a) as obvious over Fujisawa. The subject matter of claim 1 is directed to a Cr-based alloy having greater than 60 mass% of Cr and not more than 20 mass% combined of C and N.

The Examiner asserts that Fujisawa discloses a Cr-based alloy. The Examiner determined that Fujisawa discloses C, N and O can be present in amounts which are required by the claimed invention. (Answer, p. 3). The Examiner acknowledges that the alloy of Fujisawa does not have a Cr content exceeding 60 wt%. (Answer, p. 3). However, the Examiner asserts that the Cr content of 60.0001 wt%, an amount that is within the scope of the claimed invention, would have been obvious because Fujisawa discloses 60 wt% Cr which is close enough to the claimed invention that the properties would have been expected to be the same. (Answer, p. 3).

Appellant argues that Fujisawa does not teach, disclose or suggest Cr exceeding 60 wt%. (Reply Brief, p. 6). Appellant also argues that

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Fujisawa teaches away from using a Cr content exceeding 60 wt%. Specifically, Appellant argues that Fujisawa teaches that the addition of Cr in excess of 60 wt% is undesirable because of insufficient workability, increased cost and insufficient improvement in the acid resistance. (Brief, p. 7). Further, Appellants assert that evidence commensurate in scope with the claimed invention "is not necessary because the cited documents teach away from the presence of Cr in amounts exceeding 60 mass%." (Reply Brief, pp. 2-3).

Appellant's arguments are not persuasive. The Federal Circuit has held that a *prima facie* case of obviousness exists when the claimed range and the prior art range do not overlap but are close enough such that one skilled in the art would have expected them to have the same properties. *Titanium Metals Corp. of Am. v. Banner*, 778 F.2d 775, 783, 227 USPQ 773, 779 (Fed. Cir. 1985) (The court determined that a claim directed to an alloy containing "0.8% nickel, 0.3% molybdenum, up to 0.1% maximum iron, balance titanium" would have been *prima facie* obvious in view of a reference disclosing alloys containing 0.75% nickel, 0.25% molybdenum, balance titanium and 0.94% nickel, 0.31% molybdenum, balance titanium.). The claimed subject matter includes Cr content slightly above

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60 wt%. A person of ordinary skill in the art would have reasonably expected that an alloy having a Cr content slightly above 60 wt% would perform as disclosed by Fujisawa. Further, Appellant has not directed us to evidence that minor increases in the amount of Cr above 60 wt%, such as identified by the Examiner, would have resulted in poor workability and insufficient improvement in the acid resistance.

We therefore affirm the rejection of claims 1, 3 and 4 under 35 U.S.C. § 103(a) as obvious over Fujisawa.

The Examiner rejected claims 1 to 6 under 35 U.S.C. § 103(a) as obvious over the combined teachings of Shida and Abiko. The subject matter of claims 1 and 2 is directed to a Cr-based alloy having greater than 60 mass% of Cr and not more than 20 mass% combined of C and N.

The Examiner asserts that it would have been obvious to lower the content of C, N, S and O in the alloy of Shida to meet the compositional limitations of the claimed invention. (Answer, p. 4). We do not agree.

We agree with Appellant, Brief pages 9 and 10, that combining the teaching of Shida and Abiko is not proper. Shida discloses a Cr containing heat resistant alloy useful as a hearth member of a steel heating furnace.

Shida discloses that the alloy comprises greater than 70% Cr, 2000 ppm or

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less of N and 2000 ppm or less of O. (Paragraph 0005). Shida discloses that the 70% Cr content allows for raised compression-set resistance and creep deformation resistance. (Paragraph 0007). The N and O content of the alloy has an effect on the required high melting point. (Paragraph 0008). Shida does not discuss the workability of the alloy. Abiko discloses a Cr containing alloy that has high temperature strength and improved workability. Abiko discloses that the oxidation resistance of the high temperature alloy material becomes saturated if the amount of Cr exceeds 60 wt% . (Paragraph 0018).

There is no incentive to combine the teaching of Shida and Abiko as suggested by the Examiner. Shida is not concerned with the workability of the Cr containing alloy. Shida discloses that the content of N and O has an effect on the required high melting point of the alloy. Thus, a person of ordinary skill in the art would not have had motivation to lower the content of N and O as suggested by the Examiner. Moreover, there is no incentive to modify Abiko to include greater than 60 wt% of Cr because Abiko discloses the undesirable effects of high amounts of Cr.

The mere fact that the prior art could be modified as proposed by the Examiner is not sufficient to establish a *prima facie* case of obviousness. See *In re Fritch*, 972 F.2d 1260, 1266, 23 USPQ2d 1780, 1783 (Fed. Cir. 1992).

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The Examiner must explain why the prior art would have suggested to one of ordinary skill in the art the desirability of the modification. See *Fritch*, 972 F.2d at 1266, 23 USPQ2d at 1783-84. The Examiner has not provided such an explanation.

### **CONCLUSION**

The rejection of claims 1, 3 and 4 under 35 U.S.C. § 103(a) as obvious over Fujisawa is affirmed. The rejection of claims 1 to 6 under 35 U.S.C. § 103(a) as obvious over the combined teachings of Shida and Abiko is reversed.





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